

**REMARKS**

This response, submitted in response to the non-final Office Action dated May 12, 2005, is believed to be fully responsive to the points of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

Claims 1-22 are pending. Claims 1-3 and 6-22 have been rejected under 35 USC 103(a) over US Patent No. 6,254,703 (Sokol), in view of US Patent No. 6,548,782 (Dykes), in further view of US Patent No. 5,987,042 (Staver). The Examiner indicated that Claims 4 and 5 would be allowable if rewritten in independent form. Applicants respectfully submit the following remarks in support of the patentability of the pending claims.

**1. Claims 1-11:**

The Examiner indicated that Claims 4 and 5 would be allowable if rewritten in independent form. Claim 6 depends from Claim 5. Accordingly, Applicants submit that Claim 6 also contains allowable subject matter.

As regards the independent claim, Claim 1 is directed to a system for laser shock peening (LSP) a workpiece having a confinement fluid film thereover. The system includes a peening laser for projecting a pulsed laser beam at a target site on the fluid film atop the workpiece. The system further includes a monitor to monitor the film at the target site. The monitor includes a probe laser for projecting a probe laser beam at the target site and an optical detector optically aligned with the target site for detecting reflection of the probe beam therefrom. The system further includes a controller operatively coupled to the peening laser and detector for initiating the pulsed laser beam in response to the quality of the monitored film.

FIG. 1 of the present application illustrates an exemplary LSP system. Reference numeral 20 indicates the peening laser for projecting a pulsed laser beam at a target site on the fluid film atop the workpiece. (See for example, paragraph 18 on page 4.) A monitor 34 to monitor the film at the target site is described beginning on paragraph 24 on page 5. The monitor includes a probe laser 36 for projecting a probe laser beam at the target site (FIG. 1, paragraph 25 on page 6) and an optical detector 40 optically aligned

with the target site for detecting reflection of the probe beam therefrom (FIG. 1, paragraph 26 on page 6).

In contrast, none of the references cited by the Examiner discloses a monitor to monitor the film at the target site, which includes a probe laser for projecting a probe laser beam at the target site and an optical detector optically aligned with the target site for detecting reflection of the probe beam therefrom, as recited by Claim 1. Sokol is cited for disclosing a method and apparatus for quality control of laser shock processing. (Page 2 of May 12, 2005 Office Action.) As noted on page 3 of the Office Action, Sokol does not teach a controller. Dykes is cited to supply the controller deficiency of Sokol. However neither Sokol nor Dykes teaches a monitor to monitor the film at the target site, which includes a probe laser for projecting a probe laser beam at the target site and an optical detector optically aligned with the target site for detecting reflection of the probe beam therefrom, as recited by Claim 1. Instead Sokol teaches the use of a radiometer or acoustic detection device (Abstract). Dykes employs a measurement device capable of measuring the thickness of both paint and water (Col. 7, lines 50-53). In particular, neither Sokol nor Dykes teaches or suggests the use of a probe laser, as recited by Claim 1.

The Examiner cites Staver as teaching the use of a Q-switch and clock signal. However, Staver does not disclose a probe laser, as recited by Claim 1, and thus does not supply this deficiency of Sokol and Dykes. For at least these reasons, Applicants submit that Claim 1 is patentably distinguishable over the cited art, either alone or in combination. As Claims 2, 3 and 6-11 depend from Claim 1, these claims are also patentably distinguishable over the cited art for at least these reasons. Accordingly, Applicants respectfully request that the rejections of Claims 1-3 and 6-11 be withdrawn.

## **2. Claim 12-17:**

Claim 12 is directed to a system for laser shock peening a workpiece having a confinement fluid film thereover. The system includes means for projecting a pulsed laser beam at a target site on the fluid film atop the workpiece. The system further

includes means for monitoring the film at the target site by reflecting and detecting a probe laser beam from the target site. The system further includes means for controlling the pulsed laser beam in response to the condition of the monitored film.

As discussed above, Sokol does not teach or suggest means for monitoring the film at the target site by reflecting and detecting a probe laser beam from the target site or means for controlling the pulsed laser beam in response to the condition of the monitored film. Dykes is cited to supply the controlling means. However, none of the cited references discloses means for monitoring the film at the target site by reflecting and detecting a probe laser beam from the target site, as discussed above with respect to Claim 1. In particular none of the cited references teaches reflecting and detecting a probe laser beam from the target site, as recited by Claim 12.

For at least these reasons, Applicants respectfully submit that Claim 12 is patentably distinguishable over the cited art, either alone or in combination. As Claims 13-17 depend from Claim 12, these claims are also patentably distinguishable over the cited art for at least these reasons. Accordingly, Applicants respectfully request that the rejections of Claims 12-17 be withdrawn.

### **3. Claims 18-22:**

Claim 18 is directed to a method for laser shock peening a workpiece having a confinement fluid film thereover. The method includes projecting a pulsed laser beam at a target site on the fluid film atop the workpiece. The method further includes monitoring the film at the target site by reflecting and detecting a probe laser beam from the target site. The method further includes controlling the pulsed laser beam in response to the condition of the monitored film.

As discussed above, none of the cited references teaches or suggests monitoring the film at the target site by reflecting and detecting a probe laser beam from the target site, as recited by Claim 18. For at least these reasons, Applicants respectfully submit that Claim 18 is patentably distinguishable over the cited art, either alone or in

combination. As Claims 19-22 depend from Claim 18, these claims are also patentably distinguishable over the cited art for at least these reasons. Accordingly, Applicants respectfully request that the rejections of Claims 18-22 be withdrawn.

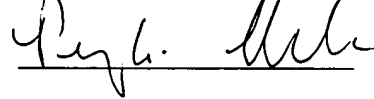
**CONCLUSION**

In view of the foregoing, Applicants respectfully submit that the application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are respectfully requested.

**Please charge all applicable fees associated with the submittal of this Amendment and any other fees applicable to this application to the Assignee's Deposit Account No. 07-0868.**

Should the Examiner believe that anything further is needed to place the application in even better condition for allowance, the Examiner is requested to contact Applicants' undersigned representative at the telephone number below.

Respectfully submitted,



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